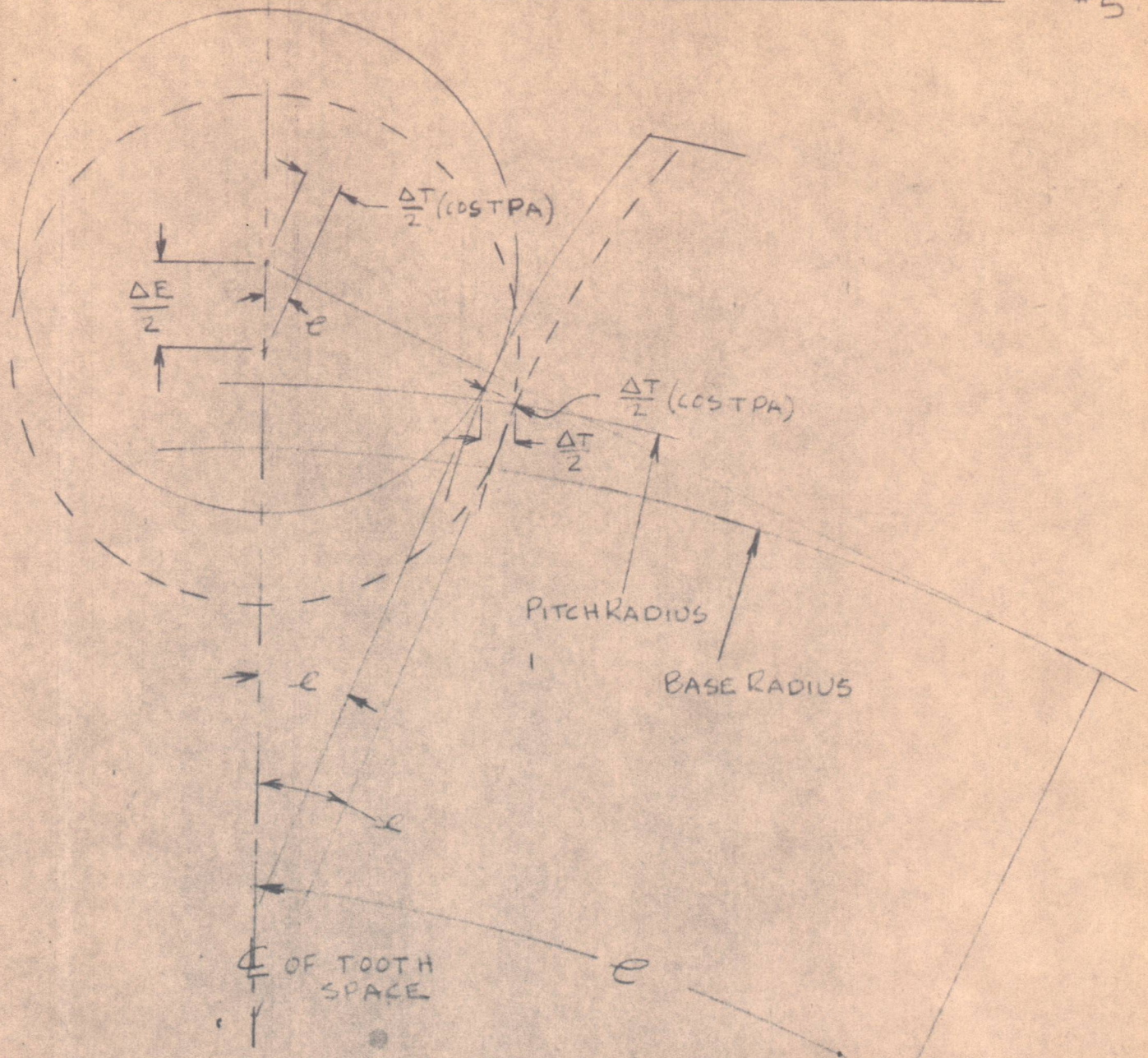
EXPLANATION & DERIVATION OF K FACTOR

FOR-SHEET #5



ΔT = CHANGE IN TRANS T.T AT P.D.

ΔE = CHANGE IN MEAS. OVER PINS

ℓ = P.A. AT CENTER OF BALL

$$\cos \ell = \frac{\text{BASE RADIUS}}{\text{RADIUS TO CENTER OF BALL}}$$

TPA = TRANS. PRESSURE ANGLE AT P.D.

K = CONSTANT, WHICH WHEN MULTIPLIED BY ΔT, GIVES ΔE

NOTE! FOR ODD # OF TEETH,

$$\Delta E = \Delta T \left[\frac{\cos TPA}{\sin \ell} \right] \cos \frac{90}{N}$$

5-19-63 R.H.M

DERIVATION

$$\frac{\Delta E}{2} = \frac{\frac{\Delta T}{2} (\cos . TPA)}{\sin . \ell}$$

MULT. BY $\sin \ell$

$$\frac{\Delta E (\sin \ell)}{2} = \frac{\Delta T (\cos . TPA)}{2}$$

MULT BY 2

$$\Delta E (\sin . \ell) = \Delta T (\cos TPA)$$

$$\Delta E = \Delta T \left[\frac{\cos . TPA}{\sin \ell} \right]$$

↑ K FACTOR